ENVIRONMENTAL MANAGEMENT SYSTEM

for the

Stuttgart Location (SNARC\DBNRRC)
U.S. Department of Agriculture
Agricultural Research Service

INTRODUCTION

The U.S. Department of Agriculture, Agricultural Research Service, and Stuttgart Location (SNARC\DBNRRC) are committed to continually improving the environment. Establishing an Environmental Management System (EMS), as required by Presidential Executive Order (E.O.) 13148, is an effective mechanism for demonstrating this commitment. This plan establishes EMS guidance for SNARC\DBNRRC. Our EMS activities are congruent with Area and Agency-wide EMS efforts.

SNARC\DBNRRC's EMS has been developed in the spirit of International Organization for Standardization (ISO) Standard 14000 and the Environmental Protection Agency (EPA) "Code of Environmental Management Principles". These standards are performance standards, not specification standards. They allow any number of equally valid approaches in establishing an EMS, so long as the ultimate goal, continual environmental improvement, is achieved.

Joel Ledbetter is designated as the SNARC\DBNRRC EMS Coordinator. The Coordinator will be assisted by an EMS Committee, listed in Appendix A.

This EMS incorporates and supersedes the SPBL Pollution Prevention and Waste Minimization Plan required under Executive Order 12856. The pollution prevention opportunity assessments, goal setting, recordkeeping, training, and other activities conducted under that plan are now included within the analogous sections of this EMS.

This plan is available for all employees to review, and a copy is located on each unit's website and in library at SNARC & DBNRRC.

SCOPE

This program applies to all SNARC\DBNRRC-controlled employees, facilities, and activities. This program does not apply to collocated individuals, facilities, or activities beyond the jurisdiction of SNARC\DBNRRC; however, we hope the example of our EMS inspires them to improve their environmental performance.

REFERENCES

E.O. 13148, "Greening the Government through Leadership in Environmental Management", April 21, 2000.

Executive Order 12856, Federal Compliance with Right-to Know Laws and Pollution Prevention Requirements (August 3, 1993)

Executive Order 12873, Federal Acquisition, Recycling, and Waste Prevention (October 20, 1993)

Executive Order 12902, Energy Efficiency and Water Conservation (March 8, 1994)

Executive Order 12843, Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances (April 21, 1993)

Executive Order 12844, Federal Use of Alternative Fueled Vehicles (April 21, 1993)

Executive Order 12845, Purchasing Energy Efficient Computer Equipment (April 21, 1993)

Executive Order 12898, Federal Actions to Address Environmental Justice

U.S. Environmental Protection Agency, "Code of Environmental Management Principles (CEMP)".

ISO Standard 14001, "Environmental Management Systems".

DEFINITIONS

Appropriate facility: A facility whose activities or operations have a potential to affect the environment. All ARS Area Offices and Locations are considered "appropriate facilities."

Environmental aspect: An element of ARS' activities or services that can or does interact with the environment (i.e., create an environmental impact).

Environmental impact: Any change to the environment, whether adverse or beneficial, resulting from an environmental aspect.

Environmental Justice: The management of environmental problems and policies to reduce differences in whom bears environmental risks. Also called "environmental equity".

Environmental Management System: A framework that allows an organization to consistently address and improve the effects its operations may have on the environment. At its essence, an EMS is a simple continual improvement loop in which a facility (1) identifies its environmental aspects and impacts, (2) selects the most significant of those aspects/impacts as targets for improvement, (3) develops improvement goals and procedures for the significant aspect/impacts, and (4) reevaluates its accomplishments in November of each year, returning to Step (1) to continue the loop.

Pollution Prevention: Practices which reduce the amount of hazardous substances, pollutants, or contaminants entering the waste stream or being released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and practices which reduce the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

Pollution Prevention Opportunity Assessment: An assessment that investigates and prioritizes pollution prevention methods for each waste. It also identifies methods to reduce material and power consumption, investigates opportunities to change processes, waste generation patterns, and material or power consumption to reduce associated environmental impacts. Pollution Prevention Opportunity Assessments were a formal activity under the now-superseded Pollution Prevention and Waste Minimization Plan. They are now incorporated as part of this EMS's aspect/impact/significance analysis.

Significant environmental aspect/impact: The most serious, or the most easily improved, of a facility's environmental aspects/impacts. Identified in November of each year, significant environmental aspect/impacts will be the target of the facility's improvement efforts in the following calendar year.

RESPONSIBILITIES

The LC approves, by signature, this EMS. The LC appoints and supports the EMS Coordinator and Committee. The LC authorizes and supports the implementation of this plan, regularly scheduled reviews of this plan, and amendments or changes to this plan. The LC provides resources for training, equipment, and other support required by this plan. The LC for SNARC\DBNRRC is Don Freeman.

The Location Administrative Officer (LAO) maintains an up-to-date copy of this EMS and keeps files and records of program activities. The LAO responds to EMS-related data calls from the Area Office or headquarters, or for assisting the EMS Coordinator/Committee in responding to these data calls. The LAO for SNARC\DBNRRC is Jeanie Gwathney.

The EMS Coordinator is the chair of the SNARC\DBNRRC EMS Committee. In consultation with Location management and the EMS Committee, the Coordinator is responsible for overseeing day to day EMS management. The Coordinator conducts, or arranges to have conducted, the activities in "Specific Program Elements", below. When Location resources are required, the Coordinator requests resources from Location management. The Location EMS Coordinator for SNARC\DBNRRC is Joel Ledbetter.

The EMS Committee shall have a representative of each management unit. A list of current Committee members is contained in Appendix A. The Committee may be selected by Location management or by the EMS Coordinator in consultation with Location management. The term of individual members, and the frequency of committee meetings, may be set by the Location.

SPECIFIC PROGRAM ELEMENTS

The Southern Plains Area developed a twelve step model for implementing EMS requirements. SNARC\DBNRRC's EMS is based upon that model. The first three steps were performed when the EMS was established. The remaining nine steps repeat from year to year in a continual improvement loop.

1. Define Scope: This EMS covers all ARS controlled operations at SNARC\DBNRRC, including research, administrative support, vehicle and equipment operation, and facilities management. This program does not apply to collocated individuals, facilities, or activities beyond the jurisdiction of SNARC\DBNRRC; however, we hope the example of our EMS inspires them to improve their environmental performance.

2. Establish a Location-level Environmental Policy: The SNARC\DBNRRC EMS Policy is presented in Appendix B.

3. Assign Responsibility: The LC has delegated day to day EMS management to the EMS Coordinator. The Coordinator cannot manage the EMS alone. An EMS committee, with representatives from each management unit, has been established to assist the Coordinator. Individual Committee members may be assigned specific duties under the EMS.

4. Training and Competence: To ensure full employee participation in the SNARC\DBNRRC EMS, employees must be trained in the existence the EMS, its general provisions, and their specific roles in helping SNARC\DBNRRC achieve its targets of continual environmental improvement. There are four general levels to this training. First, current SNARC\DBNRRC employees are required to participate in general EMS awareness training. Second, EMS training will be incorporated into the orientation program of new SNARC\DBNRRC employees. Third, if the EMS identifies a task or function as a target for environmental improvement, employees with responsibility in that task or function will be trained in the steps necessary to support the improvement target. Fourth, mechanisms such as bulletin board postings, discussion during staff meetings, and e-mail EMS updates, shall be used to maintain employee interest and awareness in the EMS.

5. Identify Environmental Aspects and Impacts: The EMS Coordinator and Committee, in consultation with SNARC\DBNRRC management and employees, shall identify SNARC\DBNRRC's environmental aspects and impacts. In the first years of EMS implementation, it is expected that we shall identify several, general aspects/impacts in each SNARC\DBNRRC Management Unit. As time passes, and as EMS becomes more integrated into SNARC\DBNRRC operations, we expect to identify more aspects/impacts, and more specific aspects/impacts, in each Management Unit.

6. Identify Emergency Preparedness Issues (if any): As part of the aspect/impact prioritization process, emergency preparedness issues associated with each aspect/impact must be identified. If, for example, SNARC\DBNRRC decides to collect and dispose of its mercury-containing equipment as part of our EMS, we would have to procure mercury spill kits for the room where the equipment is stored prior to disposal.

7. Identify Compliance and Environmental Justice Issues (if any): As part of the aspect/impact prioritization process, compliance issues associated with each aspect/impact must be identified. If, for example, SNARC\DBNRRC decides to decommission and dispose of electrical equipment containing polychlorinated biphenyls as part of our EMS, we would have to do this under the requirements of the Environmental Protection Agency's polychlorinated biphenyl regulations, 40 Code of Federal Regulations, Section 761.

8. Prioritize Environmental Aspects/Impacts: In conjunction with Steps 6 and 7, above, the EMS Coordinator and Committee shall determine the priority of our identified aspects/impacts. In general, aspects/impacts that pose an immediate threat to human health or the environment, or that are in non-compliance with an existing regulation, must be categorized as having a higher priority.

9. Determine Significance of Environmental Aspects/Impacts: In conjunction with Steps 6 thru 8 above, the EMS Coordinator and Committee shall determine the significance of our identified aspects/impacts. A "significant" aspect/impact is one for which SNARC\DBNRRC will establish improvement goals and procedures in accordance with Step 10, below.

Aspects/impacts may be deemed significant based on the inherent risks of the materials or operations, the natural resources they consume, regulatory requirements, community interaction, or a combination of these factors. An aspect/impact may also be deemed significant if it is easily rectified, or if SNARC\DBNRRC is already working to

rectify it. Research initiatives (e.g., research that leads to water conservation or pesticide reduction technologies) may also be considered in determining the significance of an aspect/impact.

10. Set & Pursue Performance Goals: For each of the aspects/impacts identified as "significant" under Step 9, above, the EMS Coordinator and Committee, in consultation with SNARC\DBNRRC management and employees, shall develop measurable and achievable improvement goals, and the strategies for achieving those goals. These performance goals shall be communicated to the Area Office in November of each year. The associated improvement strategies shall be implemented on January 1 of the following calendar year.

11. Document EMS Implementation: Each step of the EMS process must be documented. The documentation demonstrates the effectiveness of our EMS and our compliance with governing regulations. Specific requirements are listed in the DOCUMANTATION section, below.

12. Evaluate Performance: At the end of each calendar year, the EMS Coordinator and Committee will evaluate SNARC\DBNRRC's progress on achieving its EMS performance goals. The evaluation shall also look at the EMS process itself, to determine if the EMS is effective or if it needs improvement. The review shall be memorialized in a short report to SNARC\DBNRRC management.

TRAINING & AWARENESS REQUIREMENTS

EMS Awareness Training - Required for all SNARC\DBNRRC employees. Awareness training shall be included in the orientation of new SNARC\DBNRRC employees.

EMS Task-Specific Training - Required for employees whose jobs have relevance to a significant aspect/impact.

EMS Update Training - As the EMS is updated each year, and as new significant aspects/impacts are developed, update training is required for SNARC\DBNRRC employees.
EMS Publicity - EMS memos and reminders will be posted in various places and sent out through email to all employees at various times.

INSPECTION REQUIREMENTS

At the end of each calendar year, the EMS Coordinator and Committee will evaluate the effectiveness of the SNARC\DBNRRC EMS and the Location's progress on achieving its EMS performance goals.

RECORDKEEPING REQUIREMENTS

Each step of the EMS process must be documented. EMS records shall be kept for five years. SNARC\DBNRRC will keep the following records in support of the EMS:

- EMS Policy: A copy of the most recent SNARC\DBNRRC EMS policy statement shall be distributed to all employees, with a copy kept on each unit's website and in the library at SNARC & DBNRRC.

- EMS Coordinator and Committee: A copy of the EMS Coordinator and Committee roster (Appendix A) shall be distributed to all employees, with a copy kept on each unit's website and in the library at SNARC & DBNRRC.

- Training: EMS training records shall be kept. These may include meeting minutes and attendance rosters from staff training meetings, EMS orientation records for new employees, copies of EMS awareness memos sent to SNARC\DBNRRC staff, or other similar records.

- Identification, prioritization, determinations of significance, and goal setting/accomplishments for environmental aspects/impacts: Although the Southern Plains Area may later develop an electronic reporting template, a plain text format shall be used during the EMS implementation phase (See Appendix C).

- Performance evaluation: In November of each calendar year, the EMS Coordinator and Committee will evaluate SNARC\DBNRRC's progress on achieving its EMS performance goals. The evaluation shall also look at the EMS process itself, to determine if the EMS is effective or if it needs improvement. The review shall be memorialized in a short report to SNARC\DBNRRC management, a template for which is in Appendix D.

REPORTING REQUIREMENTS

Although Headquarters or the Area Office may ask for copies of EMS records at any time, only two formal reports are required for the Area Office:

1. In November of each year, SNARC\DBNRRC must report the environmental aspects/impacts it has identified as significant for the following year. The report must include improvement goals for the significant aspects/impacts.

2. At the end of each calendar year, SNARC\DBNRRC must report its achievements on the significant aspects/impacts it identified for the year.

APPENDIX A

EMS COORDINATOR AND COMMITTEE MEMBERS

Mgmt. Champion	Don Freeman	*Location Coordinator for Stuttgart*
EMS Coordinator *Stuttgart*	Joel Ledbetter	*LSO- SNARC\DBNRRC\ASRU*

EMS
Committee Members

Ahmed Darwish	*Microbiologist - Snarc*
Yulin Jia	*Research Plant Pathologist - DBNrrc*
Cletus Patterson	*Facilities/Maintenance at DBNrrc*
Steve Rawles	*Research Physiologist - Snarc*
Billy Shelton	*Facilities/Maintenance at Snarc*
Jeanie Gwathney	*LAO for SNARC\DBNRRC*
Dave Gealy	*Plant Physiologist - DBNrrc*
Anna McClung	*Center Director – DBNrrc*
Bart Green	*Research Leader - ASRU*
Brittany Collins	*Biological Science Technician - ASRU*
Diana Morian	*IT Specialist for SNARC\DBNRRC\ASRU*

APPENDIX B

SNARC\DBNRRC EMS POLICY

The mission of SNARC\DBNRRC is to conduct aquaculture & rice research to address the highest priority needs of the U.S. agriculture industry and to help keep U.S. agriculture competitive in the global marketplace. In conducting this mission, SNARC\DBNRRC is committed to protecting human health and the environment; meeting or exceeding environmental regulations and guidelines; and employing sustainable pollution prevention practices. SNARC\DBNRRC will work to minimize environmental impacts, protect natural resources, and continually improve its environmental performance by:

-Maintaining a policy of commitment to environmental excellence.

-Developing annual goals, objectives, and targets to advance our program performance in terms of both regulated and unregulated impacts.

-Considering environmental impacts when making policy, planning, purchasing, and operating decisions.

-Identifying and complying with pertinent requirements in regulations, permits, policies and procedures, and industry codes that we must adhere to.

-Requesting the necessary resources to successfully carry out our goals, objectives, and targets.

-Making personnel aware of their environmental roles and responsibilities, providing appropriate training, and holding employees accountable for their performance and actions, including recognizing them for outstanding performance.

-Effectively communicating with employees and interested parties our commitment to the environment and solicit their input in developing and achieving our goals and objectives.

-Routinely monitor our environmental operations and conducting periodic inspections, audits, and reviews to ascertain that we meet applicable standards and to evaluate our program effectiveness.

-Correcting identified deficiencies in a timely manner and taking appropriate steps to prevent their recurrence.

-Clearly documenting and reporting the progress and achievements related to this policy.

APPENDIX C – 1 (Snarc)
(This goal has been cancelled, see note below)

IDENTIFICATION, PRIORITIZATION, DETERMINATIONS OF SIGNIFICANCE, AND GOALSETTING/ACCOMPLISHMENTS FOR ENVIRONMENTAL ASPECTS/IMPACTS

ASPECT:

Water Quality Measurements - Reagents

IMPACT(S):

(1) Contamination of land and water – Wet chemistry vs. IC
(2) Depletion of Natural resources.

FOR THE IMPACTS, ARE THERE:

1. Emergency preparedness issues? No

2. Compliance issues? No

HOW WOULD YOU CHARACTERIZE THE PRIORITY OF THE ASPECT/IMPACT?

Contamination of land and water	- High priority
Depletion of natural resources	- High priority

CHARACTERIZE THE ASPECT/IMPACT AS SIGNIFICANT OR NOT:

Reducing use of water chemistry reagents is significant.

SET MEASURABLE PERFORMANCE GOALS FOR EACH SIGNIFICANT APSPECT/IMPACT:

Both Impacts – 10% less reagents used (per water quality test) within next 12 months.

IMPROVEMENT PROCEDURES TO ACCOMPLISH EACH GOAL:

Ion chromatography will be phased in as a new technique for analyzing water quality parameters thus negating the need to use as many reagent-based analyses. To estimate total reagents used, we will monitor total number of analyses run and multiply by the average amount used per analysis.

NOTE:

This goal has been cancelled. Lack of funding has prevented us from purchasing the required equipment. It will be reinstated once the funding is available.

APPENDIX C – 2 (Snarc)

IDENTIFICATION, PRIORITIZATION, DETERMINATIONS OF SIGNIFICANCE, AND GOALSETTING/ACCOMPLISHMENTS FOR ENVIRONMENTAL ASPECTS/IMPACTS

ASPECT:

Lipid Extraction (Chloroform/Methanol)

IMPACT(S):

(1) Contamination of land, water, and air
(2) Depletion of Natural resources
(3) Accidental Exposure

FOR THE IMPACTS, ARE THERE:

1. Emergency preparedness issues? No

2. Compliance issues? No

HOW WOULD YOU CHARACTERIZE THE PRIORITY OF THE ASPECT/IMPACT?

Contamination of land, water and air	- High priority
Depletion of natural resources	- High priority
Accidental exposure	- High priority

CHARACTERIZE THE ASPECT/IMPACT AS SIGNIFICANT OR NOT:

Reducing use of chloroform/methanol in Lipid Extraction is significant.

SET MEASURABLE PERFORMANCE GOALS FOR EACH SIGNIFICANT APSPECT/IMPACT:

All Impacts – 10% reduction in use of chloroform/methanol per analysis by 12/07.

IMPROVEMENT PROCEDURES TO ACCOMPLISH EACH GOAL:

Supercritical carbon dioxide extraction techniques will be evaluated for their ability to extract lipids thus mitigating the use of hazardous chloroform/methanol to accomplish the same goal. To estimate total chloroform/methanol used, we will monitor total number of lipid extractions that include chloroform/methanol and multiply by the average amount used per extraction.

MILESTONES:

1. Return LECO fat analyzer to manufacturer for repair or replacement (06/06).
2. Receive, install and verify operation of repaired/replaced analyzer (12/06).
3. Begin record keeping (by 01/07).
   Process – Number of samples run X mean solvent volume/sample = solvent savings.
4. Make interim report of savings to Location EMS committee (06/07).
5. Make final report of savings to Location EMS committee (12/07).

RESPONSIBLE PERSON:

Dr. Steven Rawles

APPENDIX C – 3 (Snarc)

IDENTIFICATION, PRIORITIZATION, DETERMINATIONS OF SIGNIFICANCE, AND GOALSETTING/ACCOMPLISHMENTS FOR ENVIRONMENTAL ASPECTS/IMPACTS

ASPECT:

Disposal of product (fish).

IMPACT(S):

(1) Contamination of land and water
(2) Depletion of Natural resources
(3) Poor resource management

FOR THE IMPACTS, ARE THERE:

1. Emergency preparedness issues? No

2. Compliance issues? No

HOW WOULD YOU CHARACTERIZE THE PRIORITY OF THE ASPECT/IMPACT?

Contamination of land and water	- High priority
Depletion of natural resources	- High priority
Poor resource management	- High priority

CHARACTERIZE THE ASPECT/IMPACT AS SIGNIFICANT OR NOT:

Reducing the amount of fish product disposal is significant.

SET MEASURABLE PERFORMANCE GOALS FOR EACH SIGNIFICANT APSPECT/IMPACT:

All Impacts – 10% reduction in the amount of fish product disposal by 12/07.

IMPROVEMENT PROCEDURES TO ACCOMPLISH EACH GOAL:

Considerable more effort in donating edible fish to state and local entities will reduce amounts of edible fish that are disposed of via land fill. We will monitor the ratio of fish donated/fish disposed to establish baseline data, thereafter, we will increase donations by a minimum of 10%.

MILESTONES:

1. Begin record keeping of fish donations vs. disposals (06/05).*
   Process – Number of donated fish X average weight = product saved from disposal (PSD).
   Number of fish disposed X average weight = product disposed (PD).
   % Savings of Disposed Product = PSD/(PD+PSD) X 100
2. Make interim report of savings to Location EMS committee (06/07).
3. Make final report of savings to Location EMS committee (12/07).

*NOTE: As of 01/06, 3000x0.75 lbs = 2250 lbs of fish have been removed since June 2005, all via donations to local entities. That is a 100% savings!

RESPONSIBLE PERSON:

Dr. Steven Rawles

APPENDIX C – 4 (DBNrrc)
(This goal has been cancelled, see note below)

IDENTIFICATION, PRIORITIZATION, DETERMINATIONS OF SIGNIFICANCE, AND GOALSETTING/ACCOMPLISHMENTS FOR ENVIRONMENTAL ASPECTS/IMPACTS

ASPECT:

DNA Extraction (Phenol/Chloroform)

IMPACT(S):

(1) Contamination of land, water, and air
(2) Depletion of Natural resources
(3) Accidental Exposure

FOR THE IMPACTS, ARE THERE:

1. Emergency preparedness issues? No
2. Compliance issues? No

HOW WOULD YOU CHARACTERIZE THE PRIORITY OF THE ASPECT/IMPACT?

Contamination of land, water and air	- High priority
Depletion of natural resources	- High priority
Accidental exposure	- High priority

CHARACTERIZE THE ASPECT/IMPACT AS SIGNIFICANT OR NOT:

Reducing use of phenol/chloroform DNA extraction is significant.

SET MEASURABLE PERFORMANCE GOALS FOR EACH SIGNIFICANT APSPECT/IMPACT:

All Impacts – 15% reduction in use of solvent per analysis within next 2 years.

IMPROVEMENT PROCEDURES TO ACCOMPLISH EACH GOAL:
We are methodically reducing use of chloroform (and liquid Nitrogen) in extraction and purification of DNA and RNA at DB NRRC by changing to alternate methods (when feasible) that do not use these chemicals. The new methods do not use harsh organic solvents and are conducted at or above room temperature (however, a drawback is that they generate lower quantities of DNA which are less pure than those from the older methods; the impurities from the DNA extraction may reduce the lifespan of capillary-based DNA analyzers). To estimate total chloroform used, we will monitor total number of DNA/RNA extractions that include chloroform and multiply by the average amount used per extraction.

NOTE:

This goal has been cancelled. Over the past few years, including 2005, we have steadily moved toward DNA/RNA extraction methods that do not use chloroform or phenol As of 1/06 we estimate that 90%, of extractions performed each day at DBNRRC, are already done without chloroform or phenol. The small percentage remaining is not likely to decrease much further due to special needs of several scientists.

APPENDIX C – 5 (DBNrrc)

IDENTIFICATION, PRIORITIZATION, DETERMINATIONS OF SIGNIFICANCE, AND GOALSETTING/ACCOMPLISHMENTS FOR ENVIRONMENTAL ASPECTS/IMPACTS

ASPECT:

Consumption of reagents (polymerized acrylamide, urea, formamide, isopropanol, and buffers) by high throughput DNA sequencer.

IMPACT(S):

(1) Contamination of land, water, and air
(2) Depletion of Natural resources
(3) Accidental Exposure

FOR THE IMPACTS, ARE THERE:

1. Emergency preparedness issues? No
2. Compliance issues? No

HOW WOULD YOU CHARACTERIZE THE PRIORITY OF THE ASPECT/IMPACT?

Contamination of land, water and air	- High priority
Depletion of natural resources	- High priority
Accidental exposure	- High priority

CHARACTERIZE THE ASPECT/IMPACT AS SIGNIFICANT OR NOT:

Reducing use of reagents (polymerized acrylamide, urea, formamide, isopropanol, and buffers) by high throughput DNA sequencer is significant.

SET MEASURABLE PERFORMANCE GOALS FOR EACH SIGNIFICANT APSPECT/IMPACT:

All Impacts – 20% reduction in use of reagents per analysis by December 2007.

IMPROVEMENT PROCEDURES TO ACCOMPLISH EACH GOAL:

We are in the process of changing from an old technology ABI 3700 high throughput DNA sequencer to a new ABI 3730 high throughput DNA sequencer. The new ABI 3730 sequencer uses significantly less volume at a significantly lower cost of consumable reagents per analysis than the old ABI 3700. To estimate total reagents used, we will monitor total number of analyses run and multiply by the average amount used per analysis.

MILESTONES:

1 Acquire new ABI 3730 DNA sequencer (NS); install unit and software, receive training, calibrate output data to conform with old ABI 3700 sequencer (OS), and de-commission ABI 3700 (by 12-05).
2. Begin record keeping of number of DNA samples run on new sequencer (NS) (12-05).
   NS reagent volume used = (reagent volume/ sample on NS) X (no. samples run on NS)
   Equivalent OS reagent volume used = (reagent volume/ sample on OS) X (no. samples run on NS)
   % reduction of reagent use compared to OS =
   100-((NS reagent volume used) / (Equivalent OS reagent volume used)X 100)
3. Make interim report of savings to Location EMS committee (06/07).
4. Make final report of savings to Location EMS committee (12/07).

RESPONSIBLE PERSON:

Melissa Jia, Manager of Genomics Core Facility

APPENDIX C – 6 (DBNrrc)
(This goal has been cancelled, see note below)

IDENTIFICATION, PRIORITIZATION, DETERMINATIONS OF SIGNIFICANCE, AND GOALSETTING/ACCOMPLISHMENTS FOR ENVIRONMENTAL ASPECTS/IMPACTS

ASPECT:

Defatting rice flour and extracting amylopectin from rice flour (Butanol solvent)

IMPACT(S):

(1) Contamination of land, water, and air
(2) Depletion of Natural resources
(3) Accidental Exposure

FOR THE IMPACTS, ARE THERE:

1. Emergency preparedness issues? No
2. Compliance issues? No

HOW WOULD YOU CHARACTERIZE THE PRIORITY OF THE ASPECT/IMPACT?

Contamination of land, water and air	- High priority
Depletion of natural resources	- High priority
Accidental exposure	- High priority

CHARACTERIZE THE ASPECT/IMPACT AS SIGNIFICANT OR NOT:

Reducing use of butanol in fat/amylopectin extraction from flour is significant.

SET MEASURABLE PERFORMANCE GOALS FOR EACH SIGNIFICANT APSPECT/IMPACT:

All Impacts – 20% reduction in use of butanol solvent per analysis within next 2 years (compared to standard method).

IMPROVEMENT PROCEDURES TO ACCOMPLISH EACH GOAL:

We are methodically introducing a new method of defatting rice flour and extracting amylopectin from rice flour that uses 70% less butanol than standard methods do by using smaller sample sizes. To estimate total butanol used, we will monitor total number of defatting/amylopectin extractions and multiply by the average amount used per extraction (3 ml vs. the 10 ml volumes used in a standard method).

NOTE:

This goal has been cancelled. Limited funding and changing priorities have prevented us from purchasing the required equipment. It will be reinstated once the funding is available.

Memos

January 30, 2006
The EMS Plan and Policy were both reviewed by the EMS committee. The committee has decided to not make any changes at this time except the ones made when merging the Pollution Plan into the EMS Plan. These changes are noted and kept on file for review.

January 30, 2006
Three of the six goals have been cancelled (refer to C-1, C-4, and C-6 notes for info). Milestones and responsibilities have been added to remaining three goals (refer to C-2, C-3 and C-5 for these additions).